

ABSTRACT OF THE DISCLOSURE

5 A charged particle beam exposure system comprising: a
charged particle beam emitting device which generates charged
particle beams with which a substrate is irradiated, the charged
particle beam emitting device generating the charged particle
beams at an accelerating voltage which is lower than that at which
an influence of a proximity effect occurs; an illumination
optical system which adjusts a beam diameter of the charged
particle beams so that density of the charged particle beams is
10 uniform; an character aperture in which an aperture hole is formed
in a shape corresponding to a desired pattern to be written; a
first deflector which deflects the charged particle beams by an
electrostatic field that the charged particle beams have a desired
sectional shape and travel towards a desired aperture hole and
15 which returns the charged particle beams passing through the
aperture hole to an optical axis thereof; a reducing projecting
optical system which forms a multi-pole lens field so that the
charged particle beams passing through the character aperture
substantially reduce at the same demagnification both in X and
20 Y directions when the optical axis extends in Z directions and
form an image on the substrate without forming any crossover
between the character aperture and the substrate; and a second
deflector which deflects the charged particle beams passing
through the character aperture by means of an electrostatic field
25 to scan the substrate with the charged particle beams.

09920633-080304